

March/April 2009 \$5.00

POWERLINE EGSA

The Voice of the On-Site Power Generating Industry

Project Snapshot

Michigan Tech University
Installs Standby Power

Education

Certification Program

IBC Seismic Compliance

Understanding the
Requirements for
Power Systems

Codes & Standards

CMP13 Meets

New Technologies

Ice Station Takes On-Site
Power to New Extremes

INTERNATIONAL AIRPORT

STANDBY POWER & PARALLELING WITH UTILITY

ENGINES: Four engines rated at 2,000 kW / 2,500 kVA • Diesel fueled, skid base, double walled 1,000 gallon tank

GENERATORS: 3 phase, 60 Hz
• 13.8 kV, 104.6 amps
• Total capacity = 8 MW/10MVA, 418.4 amps

CONTROLS & SWITCHGEAR: Enercon Evolution Control System with touch screen controls

MIDWESTERN UNIVERSITY

STANDBY EMERGENCY POWER

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• Horizontal Radiator

GENERATORS: 9 MW total power • 12,470 volts

CONTROLS & SWITCHGEAR: Touch screen controls • NEMA 1 automatic paralleling medium voltage switchgear • 3 phase, 3 wire 1,200 amp main bus • SCADA monitoring system



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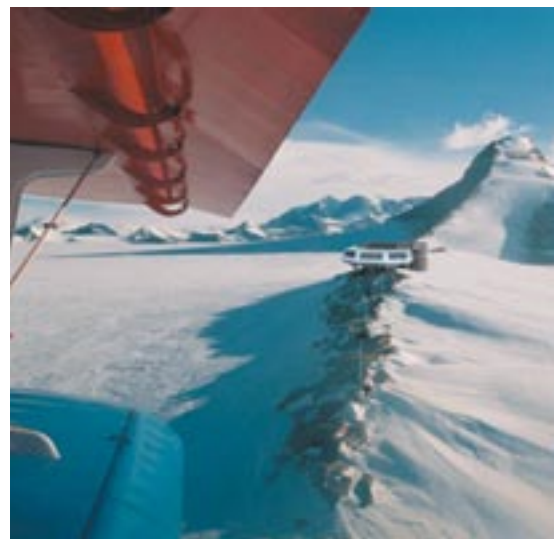
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A midwestern university uses standby power to strike a new deal with the local utility; page 26.

Conferences

EGSA 2009 Annual Spring Convention

March 15-17, 2009; San Antonio, TX

The Association's Annual Convention of Members. Speakers will cover business and technical aspects of On-Site Power Generation and current industry trends. For additional information, visit www.EGSA.org or call (561) 750-5575.

EGSA 2009 Fall Technical & Marketing Conference

September 13-15, 2009; Colorado Springs, CO

Speakers will cover business and technical aspects of On-Site Power Generation and current industry trends. For information, visit www.EGSA.org or call (561) 750-5575.

EGSA 2010 Annual Spring Convention

March 14-16, 2010, St. Petersburg, FL

The Association's Annual Convention of Members. Speakers will cover business and technical aspects of On-Site Power Generation and current industry trends. For additional information, visit www.EGSA.org or call (561) 750-5575.

Look for more industry events in our up-to-date calendar on the web at www.EGSA.org. EGSA Members: To list your meetings here, fax your information to (561) 395-8557.

Schools

EGSA On-Site Power Generation Basic Schools

Hartford, CT June 16-18, 2009

Portland, OR August 4-6, 2009

Memphis, TN October 13-15, 2009

EGSA On-Site Power Generation Advanced Schools

Indianapolis, IN April 20-23, 2009

Las Vegas, NV* December 7-10, 2009

*To be held concurrently with POWER-GEN International

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Industry Trade Shows

POWER-GEN International 2009

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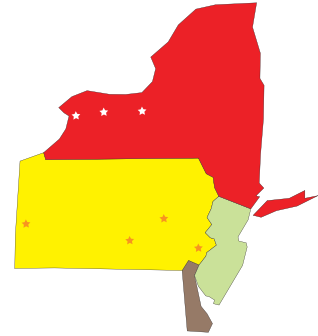
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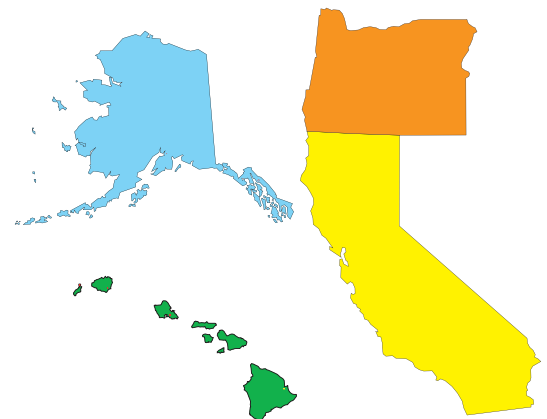
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Greg Linton
2009 EGSA President

Developing a Vision for the Future

As the first quarter comes rapidly to a close, 2009 is well under way and a lot of the unknowns written into our business plans are starting to take form. While our economic direction remains uncertain, the new Obama Administration has begun to display a few hints as to their thoughts and plans for the economy. A stimulus package is on the way, but what will that mean for you and me? At this point, too many uncertainties remain for an accurate prediction of our short-term future.

EGSA has numerous events and activities currently unfolding. Our 44th Annual Spring Convention will be held March 15-17 in San Antonio, TX. We're producing an "on-demand" On-Site Power school for the U.S. Army, and we're continuing to make progress on the new edition of the *On-Site Power Reference Book*.

We're also making great progress on developing a Strategic Plan for the Association. There are many benefits to this process. First, it engages a representative group of our membership to think, collaborate and provide a foundational structure that the Association can build upon for years to come. Second, it allows us to prioritize and target areas of importance that need further development and resource commitment. Third, and perhaps most important, it casts a vision for our future that we can all unite around. One that serves as a measuring stick for progress assessment and guides us uniformly as we move forward in our various projects. This vision will serve as a resource that allows each committee, the Board of Directors and every

member to have a common focus while simultaneously developing individual targeted objectives. The Bible states "people without a vision perish." So as you read on and become familiar with the vision statement of EGSA, consider the significance to you and the Association.

EGSA Vision Statement

To provide an environment where On-Site Power Generation industry experts unite and share knowledge to drive the industry to higher levels of service and performance.

One of the dynamic values of creating a vision is the sharing process that allows for interaction between those who are affected by the vision and those who provide impact to the vision. It's a unique opportunity for those of us in leadership positions to see how our actions and decisions influence individual members in their daily and business lives.

You'll soon hear more regarding ESGA's vision and the entire strategic plan for the Association. As always, there will be ample opportunity for every EGSA member to participate in making the plan come to life. Do you have a company vision? Who is aware of it? How effective and far reaching is it? It has been said that a survey of the people on your shop/production floor will reveal just how effective your mission and vision messages have become. How would you rate? ■

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George Rowley
EGSA Director
of Education

The Technician Certification Program: Three Years Young!

In late 2005, 60 handpicked technicians from across the United States volunteered to take the EGSA Technician Certification pilot test. We tested 20 techs with less than one year's experience, 20 with between one and five years' experience, and 20 with more than five years' experience. After validating the certification tests and the testing results, the EGSA Electrical Generator Systems Technician Certification Program became operational in April 2006, and within a month, the certification test Study Guide became available. The Study Guide enables technicians to effectively and systematically prepare for the certification test.

Beyond the pilot test, the first techs to take and pass the test did so in August 2006. Overall, the development of the program took several years of planning and study and involved almost 100 EGSA members and staff as well as Ferris State University faculty and personnel.

We have come a long way in three years. As of January 31, 2009, 303 technicians have taken

the certification test and 252 technicians have passed (only 3 certified techs are not EGSA members). The overall passing rate is just over 80%. The number of certified techs includes the 32 that passed the pilot test and 17 that reside outside of the United States. A total of 585 Study Guides have been sold. And in addition to the original uniform patch, we have made logo items (baseball caps and decals) available that enable certified techs to proudly display their achievement to customers and peers. All told, 809 logo items have been sold.

And because of significant interest in the test from Spanish-speaking technicians within and outside of the United States, we are in the process of having the tests and Study Guide translated into Spanish and they should be available within the next few months. There are no plans for a Spanish version of our *Reference Book*.

Although we have made much progress, we

Continued on page 12



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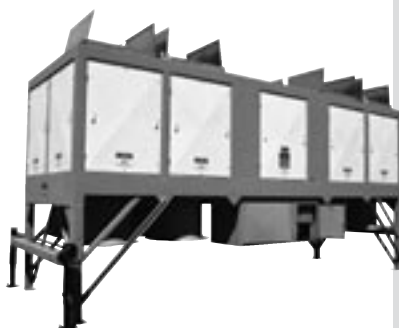
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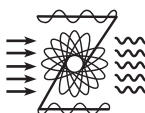
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☐ FSU 120	☐ FSU 121		Baseball Cap —These distinctive EGSA blue caps with white brim stripe, button, and vents feature the EGSA Certified Electrical Generator Systems Technician logo in front. These one-size-fits all caps are made of durable high-quality cotton and feature a flex-strap to adjust the size.	☐ \$21.25 (Purchase limited to 5 per technician)	☐ \$26.25	
☐ FSU 122	☐ FSU 123		Self-Adhesive Decal (4"x6") —These heavy-duty adhesive-backed vinyl decals are made to hold up to exposure to the elements. To help resist fading and weathering, the images are printed with UV-resistant ink and we have applied an extra coating to further protect the image from fading and abrasion.	☐ \$10.75 (Purchase limited to 5 per technician)	☐ \$15.75	
☐ FSU 124	☐ FSU 125		Self-Adhesive Decal (8"x10")	☐ \$21 (Purchase limited to 5 per technician)	☐ \$25	

Only EGSA Certified Technicians are authorized to use Certified Technician Logo Items. Please enter the technician's certificate number so that we can process the order

EGSA Certification Number

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Electrical Generator Systems Technician Certification Logo Items Order Form

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Herb Whittall
EGSA Technical Advisor

Code Making Panel 13 Meets

Code making panel 13 (cmp13) of the National Electric Code (NEC) met in Hilton Head, SC from January 19 thru January 23. I did not attend since the NFPA Correlating Committee had decided that all members of the previous panel should be excluded and picked a whole new panel. EGSA Standards Committee representative Herb Daugherty, however, did attend and represent EGSA. Cmp 13 edits the following articles of the NEC: Article 445 Generators; Article 455 Phase Converters; Article 480 Storage Batteries; Article 690 Solar Photovoltaic Systems; Article 692 Fuel cell Systems; Article 695 Firepumps; Article 700 Emergency Systems; Article 701 Legally Required Standby Systems; Article 702 Optional Standby Systems; Article 705 Interconnected Electric Power Production Sources; and Article 708 Critical Operations Power Systems (COPS).

This is a condensed version of Herb Daugherty's report on the proceedings. The committee acted on 306 proposals submitted by the public to NFPA on items they wanted added, amended or otherwise changed. However, as in the past two updates to the NEC for the 2005 and 2008 edition, two main topics took most of the time: Fire Pumps and Selective Coordination. (In spite of the committee membership change, nothing changed)

The Fire Pump proposals were basically involved with coordinating the requirements of Article 695 with NFPA 20, Chapter 9 "Electric Drive for Pumps." The Panel rewrote Article 695 over two and a half days and included several panel proposals.

Selective Coordination took about a day to finish, but not resolve. There is still serious disagreement between those who wish to leave Articles 700 and 701 as they are and those who feel modifications are needed to limit the broad definition of Selective Coordination in those articles. The major modifications sought were:

1. to allow the design engineer to use judgment to decide the level of coordination needed;
2. to require selective coordination only above the first level of overcurrent protection devices (closest to the load); and

3. to require selective coordination only above 0.1 seconds.

All of these failed with representatives of the IBEW, UL and IAEI voting against them, while consultants and users voted for the changes. So Article 700.27 and Article 701.18 remain the same as in the 2008 NEC. Interestingly, cmp15 voted to change selective coordination in Article 517 Health Care Facilities to only be needed for over 0.1 seconds (item 3 above).

Another proposal submitted by UL was requiring Ground-Fault Circuit Interrupter protection for receptacles on Portable Generators 15 kW and below. This has been the sticking point on getting UL 2201 approved and issued. The problem is that a portable generator set with GFCI's will not work as a standby unit for a finished house with a two pole circuit breaker. Apparently the GFCI will trip in the house. A three pole circuit breaker at the house is needed, but most houses are built with only two pole circuit breakers.

One other proposal accepted was to increase the fire rating of emergency circuits, wiring etc., from one hour to two hours.

Back to selective coordination. I just received a pamphlet from IEEE announcing "Power system protection and protective device coordination training" September 14-17, 2009 taught by Charles Pratt, P.E. in Orlando. Cost is \$1,800, and attendance is limited to 15 students. If you are interested in attending, visit www.quadrec.com to register.

ISO 8528-2005: *Reciprocating internal combustion engine driven alternating current generating sets. Part 5. Generating Sets* has been voted by the country member bodies to be reviewed. If anyone is interested, contact the SAE TC/70 committee.

Japan has proposed a correction be made to ISO 8178-5: 2008 *Reciprocating internal combustion engines – Exhaust emission measurement – Part 5: Test Fuels*. Section 5.2.1 Tables 1 and 2 the X axis should be % and not mg/kg; they also feel the BSFC should be raised to 144g/kWh.

As a final note, the 7th Edition of *UL 1236 Battery Chargers for Charging Engine – Starting Batteries* has been published. ■

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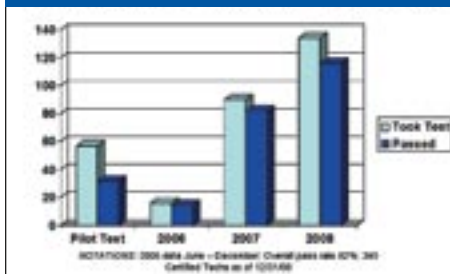


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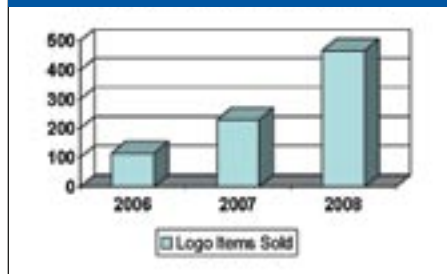


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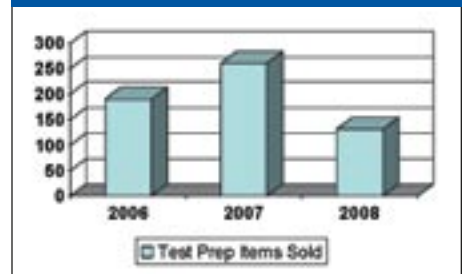
Technician Certification Testing



EGSA Logo Items Sold



Test Prep Item Sales



still have a long way to go. If one visualizes trend lines in the tables above, no one could argue that the certification program has not been a success. In addition to providing a way in which technicians can prove their abilities, the test, in essence, has established standards for technicians that can be uniformly applied across the country. Plus, it can give those that employ certified techs a significant competitive advantage within the marketplace.

The decrease in the rate of sales of test preparation items (Study Guides and Reference books) might bother some, but we have a very optimistic attitude about that

aspect of our program. Not counting the pilot test, 239 techs have taken the test but we have sold 585 test prep items. To us that means that there are about 340 techs waiting to take the test! In addition, the number of techs that have taken the test is a very small percentage of the estimated number of techs currently employed. And the number of techs that may not be associated with EGSA members might be vast. Therefore, we see a very bright future for the program characterized by continuing growth and a significant increase in the number of certified techs.

Where do we go from here and how

do we get there? EGSA will continue to do its part by promoting and improving the program. Nevertheless, the continuing success of the Certification program really depends on the Techs who want recognition of their knowledge and skills, and those that employ techs. What better way is there for employers enhance their competitive edge in these difficult financial times? Capture that competitive advantage by encouraging your techs to become certified and by providing real support to them as they prepare for the test and after they pass it. ■



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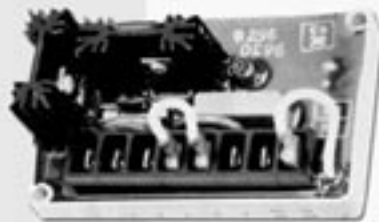
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New Antarctic Research Station Takes On-Site Power to Extremes



When it comes to supplying quality power to remote locations, On-Site Power is unquestionably the ideal solution. But can On-Site Power continue to deliver when you combine that remote location with extreme conditions? The new Princess Elisabeth Station in Antarctica says “yes.”

The new research station—launched in February 2009—was built by the Belgian Federal Government and the International Polar Foundation (IPF) to act as a technological showcase and a launch pad for wider understanding of climate mechanisms. Featuring a futuristic, pod-like design set against a backdrop of eight 6kW wind turbines, the Princess Elisabeth Station is located upon the Utsteinen nunatak in the Dronning Maud Land (East Antarctica).

The turbines are expected to endure the most severe weather conditions on Earth.

Currently, the turbines are withstanding temperatures of -60 degrees Celsius and winds of over 90 meters per second. They will be operating in average winds of 53 mph and winter gusts of over 200 mph, while still providing 230V electricity for the station’s heating, computers, lights and scientific instruments. The electricity generated is expected to be the highest output of any small wind power system in the world.

Supplied by Proven Energy, a Scottish-based small wind turbine manufacturer, the 6kW wind turbines are designed to work in extreme environments. Previous installations have weathered ice storms in Slovenia and typhoons in Japan.

In addition to the turbines, both solar thermal and photovoltaic (PV) will be used on the building itself. The water supply for the station will use solar thermal panels to

melt the snow thereby limiting the use of electrical energy to pump water.

The official opening of the station represents a technical achievement, blending the latest science and technology to make the Princess Elisabeth Station the only polar base operating entirely on renewable energies. The installation combines eco-friendly construction materials, clean and efficient energy use, optimal energy consumption and the best waste management techniques to reduce the station’s ecological footprint on the pristine environment of Antarctica and adhere to the principles set forth by the Antarctic Treaty.

The new design marks a major change in Antarctic installations as most stations rely on diesel generators because no wind turbines, until now, were thought to be robust enough for such extreme conditions.

A Scientific Station

In providing state-of-the-art facilities for a maximum of 16 scientists, the Belgian government hopes to contribute to the world-wide understanding of climate change. According to the project's web site, Antarctica constitutes an irreplaceable archive of the planet's climatic history, and delving into that past is essential in order to address urgent practical problems now needing answers.

The station's research program will be managed and coordinated by the IPF's governmental partner, the Belgian Federal Science Policy Office (Belspo). A Polar Secretariat composed of IPF members and Government representatives will coordinate the operational management of the station.

The research undertaken at the station will be synchronized with an ongoing educational program designed to explain the spectrum of polar research and to stimulate interest within future generations. The educational program will offer increased visibility to polar research and its contribution to understanding climate change. For more information, visit www.antarcticstation.org.

About the Project Principals

Proven Energy is a leading supplier of small-scale, wind turbines. Its high-performance turbine design is the result of almost 30 years of inspiration, innovation and development. For more information, visit www.provenenergy.com.



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The International Polar Foundation (IPF) communicates and educates on polar science and polar research as a way to understand key environmental and climate mechanisms. The IPF also promotes innovative and multifaceted responses to the complex challenges raised by the need for action on sustainable development. For more information, visit www.polarfoundation.org ■



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Understanding the Requirements for IBC Seismic-Compliant Power Systems

By Allan Bliemeister, Senior Staff Engineer and Michael Little, Senior Staff Engineer, Kohler Power Systems

It's important for standby power systems to function after a catastrophic event, such as a hurricane, tornado, earthquake or even a terrorist attack. In particular, critical-needs facilities—such as hospitals, police and fire stations, emergency shelters, power plants, airports, government facilities and communications and operations centers—require standby power systems that have been specifically engineered to withstand physical shocks and multi-axis accelerations typical of these disruptive occurrences.

Building standards have continued to evolve over the past several decades in the United States, along with codes for electrical and mechanical systems. The latest edition of building standards is embodied in the International Building Code (IBC 2000, 2003 and 2006), which sets requirements for structures and ancillary systems,

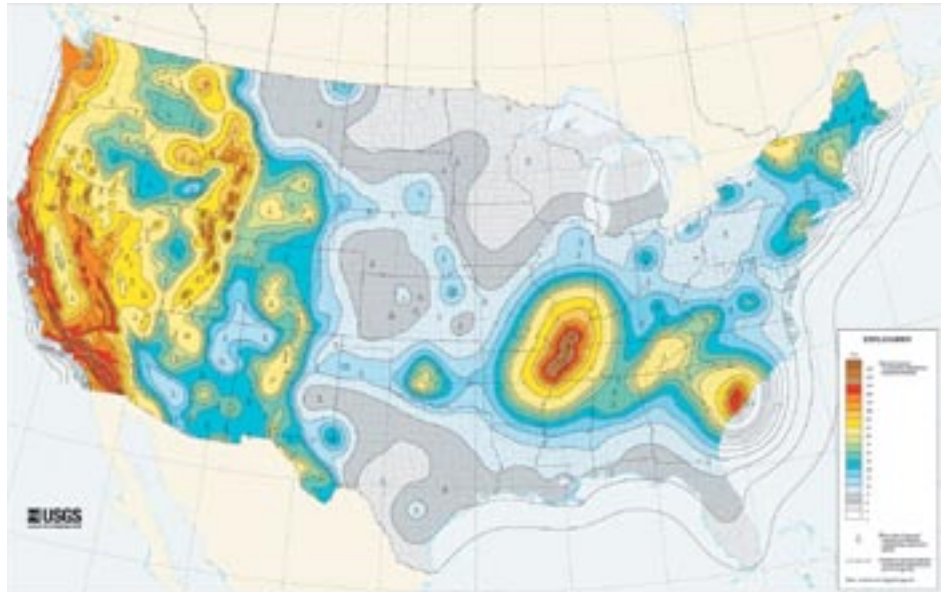


Figure 1: Seismic hazard map for the contiguous United States.

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International Standards

including standby power systems. The purpose of this article is to familiarize building owners and power system specifiers with the seismic compliance provisions of the IBC and how they apply to the design and installation of standby power systems in critical-needs facilities.

International Building Code

In 2000, the International Code Council (ICC) issued its first version of the IBC. While most of the IBC deals with life-safety and fire protection of buildings and structures, it also addresses seismic design requirements for both buildings and systems attached to buildings—such as electrical equipment. The IBC has been updated every three years, and the 2006 edition references standards from a variety of sources, such as the design requirements originally promulgated by the American Society of Civil Engineers (ASCE 7-05) in its *Minimum Design Loads for Buildings and Other Structures*.

While the IBC has an “international” label, it currently only refers to building standards within the United States. All state and many local authorities have adopted

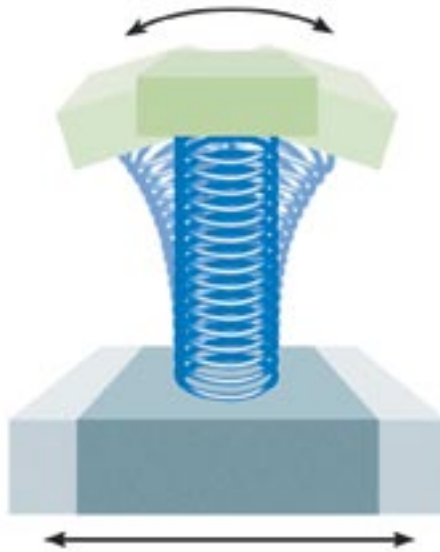


Figure 2: A model of a simple resonant system.

one version of the IBC—either the 2000, 2003 or 2006 edition. Most states have adopted the code at the state level, while other states have adopted versions of the code at the county level. While the IBC is not a government mandate, its adoption has been encouraged—and in some cases

required—to ensure funding coverage by the Federal Emergency Management Administration (FEMA). California was the last state to adopt the code and has adopted the 2006 version. There is no requirement for a state to adopt the latest version of the code, though at this time 25 states have adopted the 2006 version.

Generally speaking, the requirements for emergency power systems are the same regardless of which version of the code a state has adopted. In all versions of the code, critical equipment—including emergency power systems—must be certified to comply with the same seismic standards as the building in which they are located. In general, any critical-needs facility must be certified to the seismic requirements of its location in accordance with the U.S. Geologic Survey (USGS) data for ground accelerations. Figure 1 illustrates the areas in the U.S. with the greatest risk of earthquakes.

While seismic forces are usually associated with earthquakes, the same types of multi-axis accelerations and forces can occur during tornadoes, hurricanes and explosions. The IBC, along with its references to ASCE 7, establishes design standards for



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power systems to survive a seismic event. When certifying equipment by shake-table testing, the procedures are clarified by the ICC through ICC-ES 156 (*Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems*). In addition to shake-table testing, manufacturers can qualify systems through mathematical modeling using computer programs and accepted engineering standards that are outlined in ASCE 7.

Force fundamentals

A typical emergency power system consists of a base, engine, alternator, fuel tank, transfer switch, controls and associated engine cooling and ventilating systems. While the genset itself is a rugged piece of equipment, the more vulnerable and often overlooked parts of the system include the generator base connections, the fuel tank and other connections such as exhaust and wiring.

During a seismic or similar event, not only do the earth and man-made structures move, they oscillate—often in multiple axes. This movement is often violent, and subjects structures and other systems to rapid acceleration and deceleration at oscillation frequencies predominantly less than 5 Hz (cycles per second). Every structure or object that is free to move in space has a natural frequency at which the object will continue to oscillate once it is set into motion unless there are forces to damp its movement. For example, consider the simple spring and weight in Figure 2. Once it is set in motion, it will continue to oscillate at its natural frequency until friction forces damp its movement and expend the energy. For structures, movement is

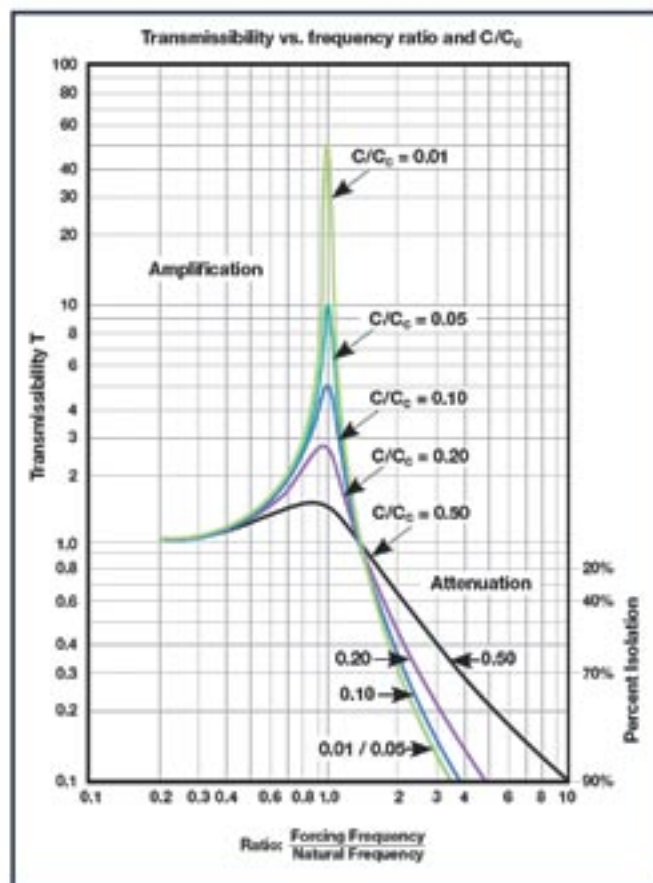


Figure 3: Transmissibility and multiples of resonant frequency.

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damped by sliding friction in structural joints, hysteresis losses or by the type of soil on which the structure is built.

What's more, if the natural frequency of a structure is equal or close to the frequency of the seismic input, and there is not sufficient damping, forces on the structure will tend to multiply often with disastrous results. This is called transmissibility (see Figure 3). However, when the natural frequency of the structure or system is significantly below the input frequency of seismic force, little energy is transferred to the structure/system and minimal or no damage occurs. Similarly, when the natural frequency of the structure is significantly above the input frequency of the seismic force the dynamics of the system result in the structure merely following the input force oscillation frequency without amplifying the seismic forces.

Seismic certification for power generation systems

The IBC has established design standards for structures and systems to withstand a seismic event. The likelihood and severity of a seismic event anywhere in the

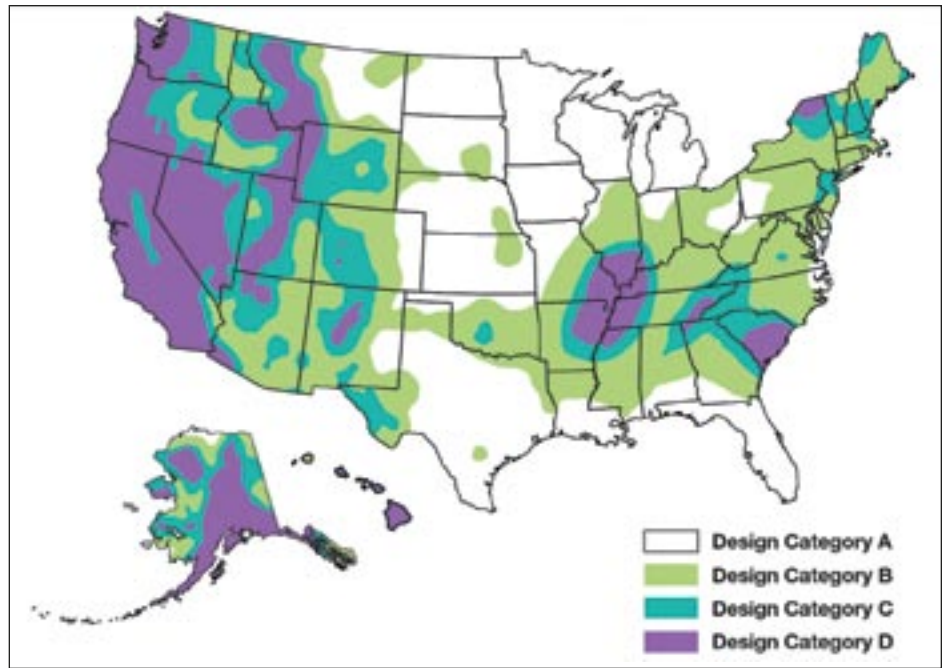


Figure 4: Map of areas that require seismically certified power systems.

U.S. is shown in Figure 1; however, Figure 4 shows areas of the U.S. where electrical generating systems require certification that they will remain online and functional after a seismic event. In general, those areas in

green represent areas of the country where critical facilities require certification. Those in blue or purple may require certification in *all* building types. Within these regions, specific site conditions such as soil type or



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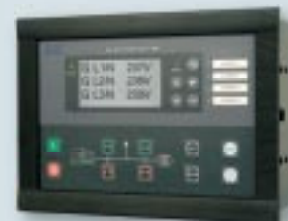
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the vertical location within a building can have a large effect on the seismic response of a structure and its contents.

Complying with the seismic provisions of IBC requires either shake-table testing in three orthogonal directions or mathematical modeling incorporating techniques, such as finite element analysis, to establish whether the product can withstand the required amount of seismic activity. In practice, power system manufacturers use a combination of shake-table testing and finite element analysis to qualify their products. Tests are performed at a nationally recognized test facility while analysis is certified by an independent approval agency.

Numerous facilities perform shake-table testing. These tests can verify the integrity of a power system design, and the results of both successful tests and failures can be used to improve design. It is not always necessary to test every individual component. For example, several transfer switch models of similar construction can be grouped together with only the worst-case configuration (mass, size, center of gravity) undergoing shake testing.

While it is possible to shake-table test gensets larger than 300kW, this is typically not done because of the extreme high costs and lengthy wait to access the few test facilities that have sufficient capacity. While diesel engines and alternators are robust machines that are normally immune to most seismic forces, mounting feet, skids, radiator supports, fuel tanks, ATS enclosures and the like require engineering analysis to determine compliance to the IBC. Additionally, it is generally agreed that components of a genset, such as electronic controls and junction boxes, cannot be mathematically modeled to prove they can withstand the forces of an earthquake. These components need to be evaluated separately from the rest of the genset through shake-table testing. During that testing, the fixture design of the table needs to replicate the way those components are attached to the genset skid.

Rating parameters determine seismic survivability

Five critical parameters are used to certify and establish equipment seismic rating levels. These are typically listed in the

certified equipment's specification sheet so that specifying engineers can use the data to verify that the equipment is rated for a particular site. Ratings apply to gensets, sound-attenuated enclosures, fuel tanks and transfer switches.

S_{DS} – IBC specifies a “design spectral response acceleration” factor, S_{DS} , that represents the base, unmodified acceleration forces used to design the system for the specific installation site. Thus, S_{DS} is a key parameter in designing a power system to resist seismic forces at a given site. S_{DS} ranges from 0 to 2.46. Seismic certification is not required for an S_{DS} of 0.167 or below.

I_p – The IBC incorporates an “importance” factor used to specify whether the power system is in a critical or noncritical application. A rating of 1.5 designates a critical system and 1.0 designates noncritical. The component importance factor, I_p , is determined to be 1.5 if any of the following conditions apply:

1. The component is required to function for life-safety purposes after an earthquake, including fire protection sprinkler systems.

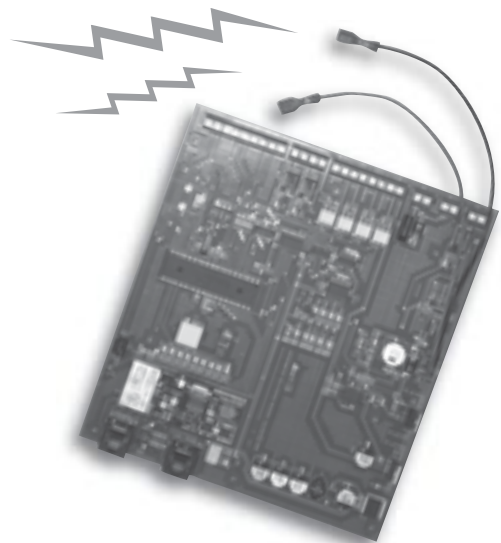
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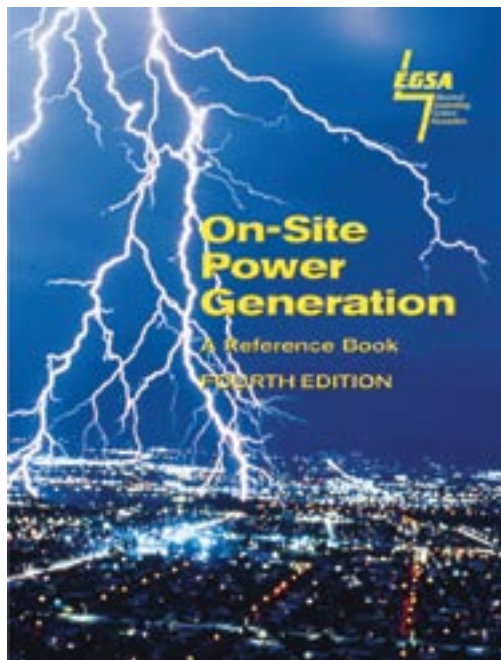
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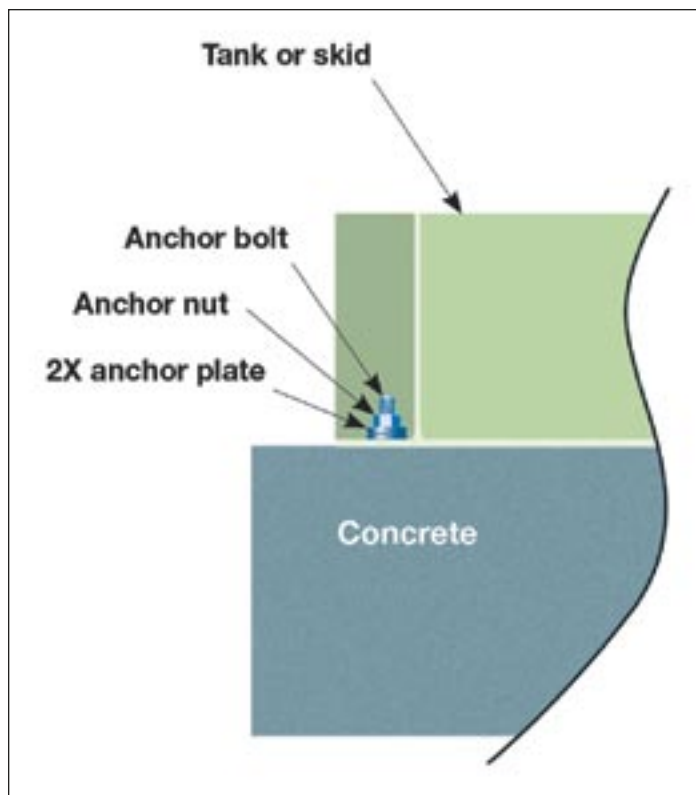


Figure 5: Example of direct mounting to a foundation.

2. The component contains hazardous materials.
3. The component is in or attached to an Occupancy Category IV structure, and it is needed for continued operation of the facility or its failure could impair the continued operation of the facility. All other components shall be assigned a component importance factor with I_p equal to 1.0.

a_p – The “component amplification” factor ranges from 1.0 to 2.5 depending on the specific component under consideration. Values are defined in the IBC and are dependent on the components’ relative stiffness.

R_p – The “component response” factor ranges from 1.0 to 12.0, depending on the specific component under consideration. Values are defined in the IBC and are dependent on the components’ relative damping.

z/h – Since equipment mounted on an upper floor of a building will experience greater forces than equipment mounted at ground level, the location of a power system within a building must be taken into consideration. This factor is expressed as a ratio of the power system installation height in the building (z) to the height of the building (h). Its value ranges from 0 at ground level to 1 for rooftop installations.

Installation and mounting considerations

Installation and mounting are of equal importance to the design of the power system to ensure that the components remain connected to the structure and their foundations throughout a seismic event.

Specific site parameters need to be addressed to ensure that a power system is in compliance with IBC. Geographic location, soil profiles and installations below-ground, at ground-level or on rooftops all play a role in determining a system’s mounting requirements and IBC compliance.

Power system manufacturers supply installers with critical information about bases, anchor requirements and mounting considerations for seismic installations, but the installing contractor is responsible for proper installation of all anchors and mounting hardware. For example, anchor locations, size and type are specified on the installation drawing. Mounting requirements, such as anchor brand, type, embedment depth, edge spacing, anchor spacing, concrete strength and wall bracing, must be approved by the structural engineer of record, who is responsible for confirming that the system will withstand the specified seismic loads.

Structural walls, structural floors and pads must also be seismically designed and approved by the structural engineer of record. The installing contractor is responsible for proper installation of all electrical wiring, piping, ducts and other connections to the equipment. It is necessary that these components remain intact and functional, and do not inhibit the functionality of the genset after a seismic event.

Mounting and misnomers

Mounting can be either direct or through anti-vibration isolators. In direct mounting, the product is fastened directly to a concrete pad. All sets with integral rubber anti-vibration mounts should be direct-mounted. There is no need for additional isolators unless acousticians for the project require a lower vibration transmissibility into the structure. Figure 5 illustrates direct mounting. Be aware that the use of so-called “seismic isolators” between the tank or skid and concrete *will not* protect the product during a seismic event. In fact, the use of additional isolators allows the product to move more and is actually counterproductive during a seismic event.

In the second mounting method, the product is mounted on seismically designed isolators, but the purpose of the seismic isolators is only effective in damping vibrations that might be transmitted from the genset to the foundation during normal operation. They are only called “seismic isolators” because they carry ratings for seismic applications and are designed to survive a seismic event. Additionally, they typically incorporate internal snubbing to reduce excessive motion of the equipment. However, always mount the product as the prints specify.

Conclusion

Seismically rated power systems are available for earthquake-prone areas of the U.S. for critical applications in which it is imperative for the standby or emergency power system to survive a seismic event or other disaster. These systems have been designed in accordance with well-understood engineering principles and have undergone finite element analysis and/or shake-table testing by independent testing organizations. Power system specifiers can be assured that seismically certified systems will survive seismic events, as long as the systems have been installed according to the manufacturer’s specifications.

About Kohler Power Systems

Kohler Power Systems, a division of Kohler Co., is a worldwide supplier of complete power systems, including generators, automatic transfer switches, switchgear, monitoring controls, and accessories for emergency, prime power and energy-management applications. For more information, visit www.kohlerpower.com. ■

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The International Code Council (ICC) was founded in 1994 founded by the Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International, Inc. (SBCCI) as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national model construction codes. The mission of the International Code Council is to provide the highest quality codes, standards, products, and services for all concerned with the safety and performance of the built environment.

The ICC has developed and made available an impressive inventory of International Codes, including: the International Building Code, International Existing Building Code, International Fire Code and the International Mechanical Code to name a few. All ICC codes are comprehensive and coordinated with one another to provide the appropriate package for adoption and use in the 21st Century.

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- EGSA Technician Certification Program
- On-Site Power Schools offering Continuing Education Units (CEUs)
- EGSA Conferences and Conventions
- *Powerline* magazine advertising
- The *EGSA On-Site Power Reference Book*



Plus....

- **Free job postings** in our Job Bank, located on our Website and in our bi-monthly publication *Powerline*.
- **Use of the EGSA logo** on your company advertisements, website, stationery, etc.
- **Priority booking** of your booth in the EGSA Pavilion at POWER-GEN International! Space for the 2009 show is STILL AVAILABLE! For information, contact Liz Bustamante at L.Bustamante@EGSA.org
- **EGSA Bucks Program**—You can participate in EGSA's member-referral program: If a new member lists your name as a sponsor on their membership application, you will receive \$100 in "EGSA Bucks" to apply towards any EGSA product including: Registrations, reference books, membership renewal dues, etc.
- **Industry data**—Access to EGSA's quarterly generator shipment survey.
- **Listing in EGSA's Annual Buying Guide** (distributed to *Diesel Progress* recipients, currently over 29,000 readers!) Don't forget: Your company's branch locations can receive full listings in our Annual Buying Guide for a nominal fee without purchasing a separate membership for each branch (we will list the city, state and country of each branch for free) Please visit <http://www.egsa.org/publications/buyersguide.cfm> for details.
- **Web links**—Your company information will appear on EGSA's website within the month that you join, and we will link to your website if it was listed on your membership application.
- **Networking opportunities**—make contacts with the "Who's Who" of the On-Site Power industry at EGSA events, including conferences, conventions, trade shows and receptions.

Complete membership information is available on our web site at www.EGSA.org. If you have any additional questions or needs, don't hesitate to contact us! Call (561) 750-5575 or email Liz Bustamante at L.Bustamante@EGSA.org

Iowa Governor Plans to Stand By Alternative Energy Commitment

The Associated Press reports that Iowa Gov. Chet Culver has called for his state's Legislature to stand by its \$25 million annual commitment to alternative energy.

Culver, who made the Iowa Power Fund a centerpiece of his campaign for governor, said he still strongly believes that alternative energy is a key to the Iowa economy and noted that Iowa ranks second nationally in wind energy production, behind only Texas.

The Power Fund was created to promote the goals of Iowa energy independence. Monies from the Fund are used to provide financial aid to entities conducting alternative energy business, research, or programs in Iowa.

The governor's comments were made after meeting with students enrolled in the Iowa Lakes Community College Wind Energy and Turbine Technology program. The program, which has received money from the Power Fund, trains students in various aspects of wind farm building and maintenance.

Culver's plan calls for spending \$100 million on the Power Fund over four years. However, record flooding last spring and a deep recession this winter have put the squeeze on Iowa's budget and forced the Governor to cut spending for most state programs.

NEMA Supports Obama Call for National Efficiency Standards

The National Electrical Manufacturers Association (NEMA) has endorsed President Obama's February 5, 2009 announcement on the importance of national energy efficiency standards for consumer and industrial equipment regulated by the Department of Energy (DOE).

According to NEMA President and CEO Evan R. Gaddis, NEMA members are in the energy-efficiency business, and are leaders in researching and manufacturing energy efficient products that save consumers money and meet consumer needs.

"President Obama has signed a presidential memorandum requesting that DOE set new efficiency standards for common household appliances that will save consumers money, spur innovation, and conserve energy," Gaddis said. "We have been a strong advocate for a robust national efficiency standards program that sets federal efficiency standards and avoids a patchwork of unworkable state standards. NEMA looks forward to working with Secretary of Energy Steven Chu and his team as they improve the work of the DOE Codes and Standards program."

NEMA has been at the forefront of federal efficiency standards since 1988 when Congress adopted NEMA's recommendations for fluorescent lamp ballasts. NEMA developed the first energy-efficiency stan-

dards for electric motors and distribution transformers, and those NEMA standards serve as the basis for today's federal standards for those products.

NEMA advocated for significant new standards on general service light bulbs that were adopted in the Energy Independence and Security Act (EISA) of 2007. Those lighting standards, which go into effect over a two-year period beginning January 1, 2012, represent a 30 percent increase in efficiency of light bulbs while providing consumers a variety of technologies from which to choose.

Presently, NEMA is engaged with DOE and other stakeholders in finalizing new efficiency standards for general service fluorescent lamps (e.g., 4-foot fluorescent lamps) and incandescent reflector lamps (e.g., flood and spot bulbs used in recessed lighting applications). Those new standards are to be issued by June 2009.

Founded in 1926 and headquartered near Washington, D.C., NEMA's member companies manufacture products used in the generation, transmission and distribution, control, and end-use of electricity. For more information, visit www.nema.org

EPRI to Evaluate Adding Solar Thermal Energy to Coal Plants

The Electric Power Research Institute (EPRI) has launched the second of two projects to help electric power companies



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add solar energy to fossil-fueled electric power plants, thereby reducing fuel costs and plant emissions. Tri-State Generation & Transmission Association, Inc., Progress Energy and Southern Company are participating in the project. The case study analyses will be performed by WorleyParsons Group, Inc.

Both this project, and a parallel study launched in October, 2008 at natural gas-fueled facilities, involve adding steam generated by a solar thermal field to a conventional fossil fuel-powered steam cycle to offset some of the fuel required to generate electric power. As part of the coal project, case studies will be conducted at Tri-State's 245-megawatt (MW) Escalante Generating Station in Prewitt, NM and at Progress Energy's 742-MW Mayo Plant in Roxboro, NC.

"These projects will demonstrate a near-term and cost-effective way to use large amounts of solar energy at commercial scale to provide clean electric power,"

said Dr. Bryan Hannegan, Vice President of Generation and Environment at EPRI. "These 'hybrid power plants' will combine the low-cost reliability of existing fossil power plants with the environmental benefit of renewables, and help companies meet federal and state mandates to reduce their emissions of air pollutants and greenhouse gases with renewable energy."

The projects will provide a conceptual design study and two detailed case studies. Design options to retrofit existing plants will be analyzed and new plant design options will be identified. EPRI will rely on its expertise in solar technologies, steam cycles, and plant operation, as well as past solar and fossil plant studies.

Currently, 27 states in the U.S. have enacted renewable portfolio standard (RPS) policies. Some include specific mandates that a percentage of the requirement be met with solar energy. However, most current solar applications are not cost-competitive with other power generating options. Using

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solar to augment coal or natural gas could provide the lowest-cost option for adding solar power to the generation fleet, as it utilizes existing plant assets. And because the highest-intensity solar energy typically is

Continued on page 33

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Seeking Manufacturer Principals

Aggressive Mid-South area Manufacturer's Representative firm is seeking quality onsite power equipment products to complement their lines.

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2009 School Schedule

Basic On-Site Power Schools

Hartford, CT
June 16-18, 2009

Portland, OR
August 4-6, 2009

Memphis, TN
October 13-15, 2009

Advanced On-Site Power Schools

Indianapolis, IN
April 20-23, 2009

Las Vegas, NV
December 7-10*

**To be held concurrently
with POWER-GEN International*

Our two-tiered school is a great success! We've gotten rave reviews from attendees. Some attended the Basic School and then attended an Advanced school—a combination that provided them with one of the best On-Site Power education experiences today! To get the most out of **your** training dollar, follow the guidelines below about which school you should attend.

Basic School

The Basic School is a general, but still technical, overview of On-Site Power Generation equipment. The Basic School is designed for those who are working in non-technical positions (such as Sales or Marketing, Administrative, or Company Management positions) and for those with less than three years experience working in the industry.

Each registrant will receive hand-out materials and instruction, a copy of EGSA's *On-Site Power Generation: A Reference Book*, and lunch on each of the three days.

Advanced School

In comparison to the Basic School, the Advanced School will offer more highly technical and in-depth coverage of the equipment. The Advanced School is designed for those who have attended the EGSA Basic On-Site Power Generation School; those who are employed in Engineering, Project Management, or Service positions; and for those with over three years working in the industry.

Each registrant will receive hand-out materials and instruction, a copy of EGSA's *On-Site Power Generation: A Reference Book*, and lunch on each of the four days.



Electrical Generating Systems Association

The Voice of the Global On-Site Power Industry for over 40 years

1650 S. Dixie Highway, Suite 400, Boca Raton, FL 33432

561/750-5575 Fax 561/395-8557 e-mail@egsa.org

Visit us online at www.egsa.org



Application for Membership

ELECTRICAL GENERATING SYSTEMS ASSOCIATION

1650 South Dixie Highway, Suite 400, Boca Raton, FL 33432 • 561-750-5575 • FAX 561-395-8557

E-Mail: e-mail@EGSA.org • World Wide Web: www.EGSA.org

EGSA's mission is to bring together representatives of the various segments of the On-Site Power Industry, to learn, share ideas and experiences, advance the science of On-Site Power generation, improve performance and profitability of members, and the quality of service to power users.

1. Contact Information

Please type or print all information in upper and lower case (NOT ALL CAPS!)

Company _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____ Country _____

Phone _____ FAX _____

Official Representative _____ Title _____

Representative's E-Mail _____ Company's Web Address _____

How did you hear about EGSA? ☐ Web site ☐ Powerline magazine ☐ Colleague ☐ POWER-GEN ☐ Other _____

Why are you joining EGSA? ☐ Certification Program ☐ CEU Program ☐ Power Schools ☐ Buyers Guide Listing ☐ Other _____

2. Member Classification

Read the Membership classifications below and check the box that describes your firm's classification.

I. FULL MEMBERSHIP

☐ MF **Manufacturer Membership**

Any individual, sole proprietor, partnership or corporation seeking membership must apply for a Full Membership as a manufacturer if they meet one or more of the following criteria:

1. They manufacture prime movers for power generation.
2. They manufacture generators or other power conversion devices producing electricity.
3. They manufacture switchgear or electrical control devices.
4. They manufacture or assemble generator sets, UPS systems, solar power, hydropower, geothermal, or any other power production or conversion system including related components or accessories for national or regional distribution.
5. They are a wholly owned subsidiary of a firm which qualifies under rule one through four.

☐ DD **Distributor/Dealer Membership**

Any individual, sole proprietor, partnership or corporation actively engaged as a distributor or dealer for products listed under Manufacturer Membership may apply for Full Membership as a Distributor/Dealer. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.

☐ CI **Contractor/Integrator Membership**

Any individual, sole proprietor, partnership or corporation actively engaged as a Contractor or Equipment Integrator of products listed under Manufacturer Membership, not brand by brand, geographic territory or contractually obligated as a Distributor/Dealer of a specific product. These firms typically purchase products from a Distributor/Dealer, Manufacturer or Retailer, adding value through installation, product knowledge, relationships, unique services, etc., and then re-sell the resulting product to an end-user.

☐ MR **Manufacturer's Representative Membership**

Any individual, sole proprietor, partnership or corporation actively engaged in the representation of products listed under Manufacturer Membership may apply for Full Membership as a Manufacturer's Representative. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.

☐ EM **Energy Management Company Membership**

Any individual, sole proprietor, partnership or corporation engaged in energy management, including Energy Service Companies (ESCOs), Independent Power Producers (IPPs), Integrators, Aggregators, and other similar enterprises may apply for Full Membership as an Energy Management Company.

☐ **Associate Full Membership** (mark appropriate category at right)

Any individual, sole proprietor, academic institution, student, partnership or corporation meeting the requirements of Associate Regular Membership may apply for Full Membership at their option to enjoy the privileges of Full Membership, including the rights to vote and to serve on EGSA's Board of Directors. Initiation fees and annual dues will be assessed at the existing non-manufacturers' Full Member rates.

II. ASSOCIATE REGULAR MEMBERSHIP

☐ AA **Trade Publication Membership**

Any trade publication dealing with the electrical generating systems industry or its suppliers may apply for Associate Membership—Trade Publications.

☐ AB **Trade Association Membership**

Any trade association made up of individual or company members sharing a common interest in the electrical generating systems industry may apply for Associate Membership—Allied Associations.

☐ AC **Engineer Membership**

Any consulting or specifying engineer may apply for Associate Membership—Engineer. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AD **End-User Membership**

Any individual employee of a company who owns or operates electrical generating equipment and/or related switchgear or components, whose responsibility to his employer includes planning, design, installation, supervision, or service of such equipment may apply for Associate Membership—User. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AE **Service Membership**

Any individual, organization or academic institution that offers services such as research, testing or repair to the electrical generating systems industry may apply for Associate Membership—Services. Membership may either be held in the individual's name or the organization's name under this classification. Individual companies whose employer or parent organization qualifies as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AG **Educational Institution Membership**

Any postsecondary vocational-technical school or college offering on-site power generation-related instruction may apply for Associate Membership—Education Institution.

☐ AR **Retiree Membership**

Any individual who retires from a member company may apply for Associate Membership—Retired. This classification does not apply to any individual who is employed more than 20 hours per week.

☐ AF **Student Membership**

Any individual currently enrolled at an academic institution may apply for Associate Membership—Student.

Application for Membership – page 2

Dues Schedule (Use for Section 3)

	Annual Dues	Initiation Fee	TOTAL
Manufacturer.....	\$825	\$200	\$1025
Energy Management Companies.....	\$825	\$200	\$1025
Distributor/Dealer.....	\$285	\$100	\$385
Contractor/Integrator.....	\$285	\$100	\$385
Manufacturer's Rep.....	\$285	\$100	\$385
Regular Associate Member.....	\$200	\$100	\$300
Full Associate Member.....	\$285	\$100	\$385
Retiree Member.....	Complimentary	\$0	\$0
Student Member.....	Complimentary	\$0	\$0

NOTE: A FULL 12-MONTH DUES PAYMENT MUST BE RECEIVED WITH THIS APPLICATION. The Association's Membership Year is January 1 through December 31. Dues payments that extend beyond the first Membership Year will be applied to the second year's dues.

FULL PAYMENT MUST BE RECEIVED WITH APPLICATION.

3. Membership Dues (Please fill in the appropriate TOTAL amount from the above dues schedule.)

Membership Dues \$ _____

Membership Plaque (optional)** \$ 39.95**

On-Site Power Reference Book (optional)** \$ 125.00**

Florida Residents: Add 6.5% Sales Tax to ** items \$ _____

Continental US Residents add \$5 shipping/handling to ** items. \$ _____

Non Continental US Residents should call EGSA

Headquarters for shipping charges for ** items. **TOTAL** \$ _____

4. Payment Method (Payable in US\$ drawn on U.S. bank, U.S. Money Order, or American Express)

☐ Check # _____ Amount \$ _____

☐ Money Order

☐ Mastercard ☐ Visa ☐ American Express

Card # _____ Exp. Date _____

Signature: _____

Print Name: _____

5. Products/Services Please describe the nature of your business (50 words or less, NOT ALL CAPS). If you are a Manufacturer's Representative or Distributor, please indicate for manufacturers you represent and/or distribute for; if a student, please provide name and location of your school, your major and your anticipated graduation date:

Do you buy AND sell equipment? ☐ Yes ☐ No

Do you manufacture packaged equipment? ☐ Yes ☐ No

Available Codes:

01 ---Batteries/Battery Chargers	09 ---Generator Laminations	19 ---Silencers/Exhaust Systems/Noise Abatement
02 ---Control/Annunciator Systems	10 ---Generator Sets	20 ---Solenoids
29 ---Education	11 ---Generators/Alternators	21 ---Switchgear and Transfer Switches (Automatic or Manual), Bypass Isolation Switches, and/or Switchgear Panels
30 ---Emission Control Equipment	12 ---Governors	22 ---Trailers, Generator Set
04 ---Enclosures, Generator Set	13 ---Heat Recovery Systems	23 ---Transformers
05 ---Engines, Diesel or Gas	14 ---Instruments and controls, including meters, gauges, relays, contactors, or switches	24 ---Uninterruptible Power Supplies
06 ---Engines, Gas Turbine	15 ---Load Banks	25 ---Vibration Isolators
07 ---Engine Starters/Starting Aids	16 ---Motor Generator Sets	26 ---Voltage Regulators
08 ---Filters, Lube Oil, Fuel or Air	17 ---Radiator/Heat Exchangers	27 ---Wiring Devices or Receptacles
28 ---Fuel Cells	18 ---Relays, Protective or Synchronizing	
03 ---Fuel Tanks and Fuel Storage Systems		

Enter codes here:

Products sold: _____

Products rented: _____

Products serviced: _____

6. Sponsor(s): A "Sponsor" is an EGSA Member who interested you in filling out this application. It is not mandatory that you have a sponsor for the Board to act favorably on this application; however, if a Member recommended that you consider membership, we request that individual's name and company name for our records.

Sponsor Name _____ Company Name _____

7. Official Representative's Authorization

Signature _____ Date _____

Continued from page 29

within a few hours of peak summer loads, it makes solar augmented steam cycles a particularly attractive renewable energy option. For more information, visit www.epri.com.

Wärtsilä Contracted to Supply 100 MW Power Plant to Nigeria

Wärtsilä, a leading supplier of flexible power plants for the decentralized power generation market, has been contracted to supply a 100 MW power plant to be installed in Ewekoro, Nigeria approximately 70 kilometers from the port city of Lagos. The order was placed by Lafarge Cement WAPCO Nigeria Plc, a leading manufacturer and marketer of cement in Nigeria. The company is a subsidiary of Lafarge SA of France.

The new power plant will consist of six Wärtsilä 18V50DF engines that can operate on either heavy fuel oil (HFO), light fuel oil (LFO) or gas. The turnkey project will supply electricity to Lafarge WAPCO's existing cement works as well as to its new cement plant currently under construction.

This new order, together with the plants already delivered by Wärtsilä to Nigeria, will produce a combined generating capacity of approximately 400 MWe.

Wärtsilä is also currently negotiating a subsequent operations and maintenance (O&M) agreement whereby it will take responsibility for running the power plant, thus allowing the customer to focus on its core cement producing business. When installed, the new plant will ensure a reliable electricity supply to the cement factories thus making them independent of the fluctuating supply from the grid. For more information, visit www.wartsila.com.

U.S. Takes World Lead in Wind, Solar Production

The DailyTech.com reports that the U.S. has taken the lead in total wind production thanks to strong growth. According to the Global Wind Energy Council, which released the figures, the U.S. increased its wind capacity by 50 percent in 2008 to a total of 25 GW—enough to power nearly 5 million homes. In fact, wind accounted for

42 percent of the new energy installations in the U.S.

Germany (the former wind production world leader) came in a close second with 24 GW of installed wind, while Spain claimed third place. China took the fourth slot, but posted even larger growth than the U.S., having more than doubled its capacity for the fourth straight year. If China continues its strong pace, it will soon overtake the U.S. in installed capacity. Worldwide, wind power grew by 29 percent last year to reach 121 GW total capacity.

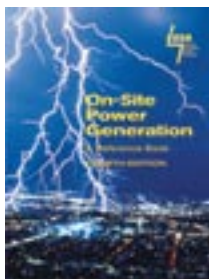
However, the U.S. isn't stopping at wind power. The data also indicated that the U.S. will seize the lead in installed solar power sometime in 2009. A separate study conducted by Jefferies analyst Michael McNamara showed that the U.S. will overtake Germany this year in solar power production. While solar power remains very costly, increased mass production and new technologies are continuing to help to lower the cost. ■

Get The Last Word In On-Site Power

EGSA's *On-Site Power Generation: A Reference Book* is widely regarded by On-Site Power professionals as the "bible" of the On-Site Power Industry.

In fact, EGSA's *Reference Book* is so highly regarded and widely recognized that five of the seven technical schools that offer On-Site Power Generation Technician training programs have adopted the *Reference Book* as their text.

If the educators who helped train your Generator Technicians keep EGSA's *Reference Book* on hand, shouldn't you?



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Stay on Top of Your Game with EGSA's Electrical Generator Systems Technician Certification Program



Think things move pretty fast in today's business world? Think how fast they'll be moving one, five or even 10 years down the road. That's why you need every advantage to stay on top.

It's no secret that technology is becoming more complex—not less—and that makes today's On-Site Power Generation System a lot more expensive. End-users—your customers—don't want just anybody with a basic knowledge of mechanics to install and maintain their equipment. They want to be confident that all work has been performed by qualified personnel. Suppliers want assurance that skilled technicians are performing maintenance and repairs to guard against unnecessary returns or warranty repairs.

AS GOOD AS YOUR WORD

In the past, your word was the only assurance that your technicians are skilled and knowledgeable. But now, through EGSA's Electrical Generator Systems Technician Certification Program, there is a way that you can back up those words with objective evidence of your technicians' proficiency.

EGSA offers you a big advantage: For the first time in our industry, we have an objective and accurate way to determine generator technician proficiency. That means that the same standards will be used to measure the skills and knowledge of technicians from Maine to Manitoba and Mexico. Yes, Manitoba and Mexico! EGSA has determined that there is no reason why the test could not be fairly applied to any NAFTA technician.

WHAT ARE THE BENEFITS?

For the Employer, certification helps ensure that your technicians have the critical knowledge and skills to succeed in their jobs. And everyone will be comfortable knowing that your certified technicians' expertise has been confirmed by the industry organization through a program that was developed by a university. Encouraging and helping your technicians become certified signifies your commitment to the highest of standards. Plus, it lends an added level of credibility to your firm and can

sharpen your competitive edge. Employing certified technicians will promote customer satisfaction and you won't have to be shy about offering assurance that your technicians are qualified. Certification can also help you select potential new hires, analyze job performance, evaluate employees and motivate technicians to enhance their skills and knowledge.

Think about the message that certification sends to those with whom you do business. Why would anyone want a technician who isn't certified performing critical maintenance or repair tasks? Employing certified technicians gives you an added tool with which to market your business.

As our members have said, "We've seen too many backyard mechanics damage expensive equipment. This program will provide credibility for my company and will help build pride and a commitment from technicians to be the best."

FOR THE TECHNICIAN

Certificate holders benefit too. Certification shows employers, clients, and associates that you are committed as a professional. It provides recognition of your knowledge and skill, shows your commitment to your profession and can help with job advancement. Certification is a mark of excellence that you carry with you everywhere you go.

Acquiring certification indicates that you have the knowledge and proficiency required to perform as an Electrical Generating Systems Technician professional. Becoming certified can increase your salary, enhance your skills, and make your job more satisfying.



Certification helps ensure that your technicians have the critical knowledge and skills to succeed in their jobs.

THE CERTIFICATION TEST

EGSA collaborated with Ferris State University to develop the certification test and program. Through a scientific process, our panel of technical experts identified 12 duty areas (such as “Basic Electricity”) and 61 tasks (such as “demonstrate knowledge of AC electrical theory”) within the duty areas. The duty areas and tasks were ranked and rated in terms of their relative importance, the frequency with which a task is performed, and skill level (i.e. Senior/Expert; Intermediate; and Entry Level.) All this data was combined to develop the certification test that was then statistically validated through a pilot test taken by generator technicians from across the United States.

WHO CAN TAKE THE TEST?

There are no pre-qualifications for taking the EGSA Certification test. We recommend three or four years of field experience before taking the test. Technicians who have had formal education in On-Site Power Generation (a degree or certificate from a technical school or community college) may need less field experience. Those who pass the test will have a comprehensive knowledge of basic electricity, the functions of a gen-set’s mechanical and electrical components, the interactions and relationships among components and an understanding of various elements of the installation, service, maintenance, and repair of gen-sets and On-Site Power Generation Systems.



CERTIFICATION TESTING COVERS:

- Automatic Transfer Switches
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- Engine Generator Instrumentation & Controls
- Multiple Generator Switchgear & Controls
- Troubleshooting System Problems
- Auxiliary Support Systems
- Basic Electricity
- Prime Movers
- Governors
- Voltage Regulators
- Generators/Alternators

USE THE STUDY GUIDE TO PREPARE!

Use of the program’s Study Guide is an excellent way to help technicians prepare for the test and should clearly indicate if they are ready to take (and pass) the certification exam. In addition to useful formula pages, the guide contains almost 200 multiple choice practice questions that cover all parts of the certification test. In addition to identifying the correct answer, the guide also indicates in most cases why a particular choice is correct and why the others are incorrect. The

Guide also identifies resource material where technicians can get additional or more in-depth information about a given topic.

Need more information? Visit us online at www.EGSA.org to find extensive and detailed information about the certification program. Or contact EGSA Director of Education George Rowley via e-mail at G.Rowley@EGSA.org.

DISCLAIMER OF LIABILITY

Certified status is an indication that an individual has completed a combination of defined education, experience or examination requirements. However, Certification is not a guarantee or assurance of the competence or ability of any particular individual. Further, given the rapid changes in the field, the Electrical Generating Systems Association cannot warrant that the Examination and other Certification materials will at all times reflect the most current state of the art.

The Electrical Generating Systems Association disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the Certification Program or the acts or omissions of any person who has been Certified by the Electrical Generating Systems Association. In conducting the Certification Program, including issuing Certifications, the Electrical Generating

Systems Association is not undertaking to render professional or other services for or on behalf of any person or entity, nor is the Electrical Generating Systems Association undertaking to perform any duty owed by any person or entity to someone else. Anyone using the services of a person who has been Certified should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

Electrical Generating Systems Association

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Director of Key Accounts

Western Branch Diesel, Inc., established in 1946, is looking for an experienced candidate in sales and management of personnel in addition to managing large accounts in the construction industry. This position is for Director of Key Accounts. Responsibilities include establishing new relationships with large accounts including owners and general contractors to grow Power Generation Division. Track and maintain projects on a nationwide basis. Oversee Key Accounts Managers; participate in trade shows and industry networking functions. Only experienced applicants will be considered. Please send resume to salesposition@wbdiesel.com or 12011 Balls Ford Road Manassas, VA 20109.

Kinsley Power Systems –Technical Sales

Position is for the Syracuse, NY & Rochester, NY territories. We're one of the largest power system companies in the northeast with a 40+ year reputation. Industrial sales- 6kW to 2800kW, including related equipment. Customer base includes engineers, electrical contractors, end-users, OEMs. Resumes to: shobbs@kinsleypower.com

Power Systems/Service Sales

Johnson & Towers, Inc. South Jersey/Philadelphia/Delaware to acquire new service accounts for generators and power system installations. Power Systems experience preferred. Excellent salary and benefits for the right person. EOE. Fax resume to 410-687-4743 or email rdiem@johnsontowers.com.

Generator Service Technicians

Kinsley Power Systems is hiring Generator Service Technicians in various areas in the Northeast. The ideal candidates possess experience to perform service work on 8.5kW – 2,500kW generators. Experience working on these generators a plus: Kohler, Caterpillar, Katolight, Cummins and others. Candidates w/strong engine experience will be considered too. Resumes to: shobbs@kinsleypower.com

EMERGENCY POWER SYSTEM SPECIALISTS

Generator Technician—Experienced

Emergency Systems Service Company in Quakertown, PA, a leading provider of emergency generator sets, has an immediate opening for a technician with a minimum of three years diesel engine/generator set background/experience. Responsibilities will involve troubleshooting, repair and the planned maintenance services of generator sets and peripheral equipment. A neat appearance, clean driving record and good people skills are required. We offer highly attractive compensation with an outstanding benefits package. A company vehicle and additional training provided. If you are interested in becoming part of our team, please call (215) 536-4973, ext. 25.

Generator Technician—Apprentice

Emergency Systems Service Company in Quakertown, PA, a leading provider of emergency generator sets, has an immediate opening for a person with a strong mechanical/electrical background interested in a career in the power generation service field. Responsibilities will involve minor troubleshooting, repair and the planned maintenance services of generator sets and peripheral equipment. A neat appearance, clean driving record and good people skills are required. An outstanding benefits package, company vehicle and additional training provided. If you are interested in becoming part of our team, please call (215) 536-4973, ext. 25.

Kinsley Power Systems –Sales Manager

Located in Albany, NY and manages corporate aftermarket sales staff. We're one of the largest power system companies in the northeast with a 40+ year reputation. Key focus – selling preventive maintenance service contracts to new customers and management of sales staff. Resumes to: shobbs@kinsleypower.com

Power Generation Field Service Manager

Ransome Cat, Caterpillar Dealer for PA, NJ and DE is seeking an experienced EPG/Commercial Marine Field Service Manager for South Jersey. Responsibilities include scheduling and dispatching technicians to perform daily service/repairs. Responsible for the parts and service operation including: planning, developing, and organizing workforce to meet projected sales volume, required profit, and customer satisfaction. Previous EPG or Marine experience required. Electrical or Mechanical Engineering Degree preferred. If you are interested in becoming a part of our team, please e-mail resume to HR@ransome.com. Fax: 215-245-2914. www.ransome.com AA/EEO

Rental Sales Position

KELLY GENERATOR & EQUIPMENT, INC., the mid-Atlantic leader in standby electrical generators is seeking an experienced and successful Rental Sales Person to join our team. We are a full service distributor of emergency standby and prime power located in Delaware, Maryland, Northern Virginia, West Virginia and Washington, D.C. Develop strong relationships with electrical and general contractors, home builders, event companies, industrial and commercial end users and rental houses. We are ready to hire someone who will focus on the rental (and sales) of mobile generator sets as well as renting load banks. We are offering a base salary, commission, bonus plan and full benefits. Please FAX resume to D. Kelly at 410-257-5227.

Power Systems Sales

Pacific Power Products has an opening for a salesperson in our Seattle WA territory. Person must be predisposed to outside sales. The position has support from dedicated project managers, sales coordination and admin. Person should have working knowledge of power generation equipment but all candidates with applicable skills will be considered. We are the distributor for MTU-Onsite Energy and Waukesha. Compensation includes base, car allowance, health insurance and 401K. Forward resumes to relder@pac-power.com

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Generator Field Technician

KELLY GENERATOR & EQUIPMENT, INC., has an immediate opening for a Generator Technician. We are located and operate in the mid-Atlantic region: Delaware, Maryland, Virginia, West Virginia and Washington, DC. Must have a High School Diploma (Vocational or GED), a minimum of 3-5 years experience servicing industrial generator sets and associated equipment. Must be able to service, repair and troubleshoot the engine, as well as the alternator end of the equipment. Begin work with little or no supervision. MILITARY A PLUS! We offer factory training on the lines we represent as well as "in house" training. Full benefits include a company vehicle, medical, dental, vision 401(k) and profit sharing. FAX resumes to 410-257-5227 or e-mail to d.kelly@kge.com.

Generator Service Technician

Generator/Energy Systems Distributor, Service and Installation Company has an immediate opening for a technician with advanced knowledge of standby generator systems, including auto-switchgear, diesel and gas fueled engines. Candidate must be knowledgeable in 12 & 24 VDC controls, to include troubleshooting and repair. Pay commensurate with experience. Please forward resumes to J.Kellough@EGSA.org (Reference PLND08JB-9).

Generator Set Sales/Service

Experienced sales/service engineer needed by southern California company to sell engine generator sets.

Please respond to J.Kellough@EGSA.org (Reference PLND06JB-1).

Generator Field Technician

A fast growing Utah based standby power company has an opening for a full-time field technician to perform routine generator and transfer switch preventative maintenance, troubleshooting, repair work, and startups. Prior field experience in the generator standby power industry is required. Must have a good driving record, be clean cut, and be drug free. Competitive wage, benefits, company cell, and company truck are available for a qualified individual. Please fax resume to 801-544-7010.

Generator Field Technician

PM Technologies, LLC has several immediate openings for Generator Technicians. We are located and operate in Michigan, Ohio and Northern Indiana. High School diploma or equivalent a must. Military experience a plus. Must be able to troubleshoot and repair the engine (diesel and gaseous) as well as the generator end. Customer interaction will be required on a daily basis. We need highly motivated, self sufficient people to assist in growing our expansion efforts at new branch locations. Benefits include company vehicle, 401k, health, dental and vision coverage's as well as paid bonuses for new account procurement. Please Fax resumes to 248.374.6408 or email to dpopp@pmtech.org

Generator Service Technicians

Kinsley Power Systems is hiring Generator Service Technicians in various areas in the Northeast. The ideal candidates possess experience to perform service work on 8.5kW-2,500kW generators. Experience working on these generators a plus: Kohler, Caterpillar, Katolight, Cummins and others. Candidates with strong engine experience will be considered too. Resumes to: shobbs@kinsleypower.com

EGSA Job Bank Guidelines

EGSA will advertise (free of charge) EGSA Member company job openings in the Job Bank.

Free use of the Job Bank is strictly limited to companies advertising for positions available within their own firms. Companies who are not members of EGSA and third-party employment service firms who service our industry may utilize the Job Bank for a \$300 fee.

Blind box ads using the EGSA Job Bank address are available upon request; company logos may be included for an additional fee. EGSA reserves the right to refuse any advertisement it deems inappropriate to the publication. Please send your classified ad (limited to about 50 words) to: EGSA Job Bank, 1650 S. Dixie Hwy, Suite 400, Boca Raton, FL 33432. Or, send it via e-mail it to: J.Kellough@EGSA.org

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EM=Energy Management Co. AA=Trade Publication AB=Trade Association AC=Engineer
AD=End-User AE=Service AG=Educational Institution AR=Retiree AF=Student

Arsenault, Darren (AF)
Blackstock, ON Canada
(905) 986-0250

Contact: Darren Arsenault
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Bertke, Jeffrey (AF)
Minster, OH
Contact: Jeffrey Bertke
Business: Student at Hocking Technical College in Nelsonville, OH studying Advanced Technical Studies.

Bozeman Technical Adjusters, LLC (AE)
Ingleside, IL
(847) 587-7630 Fax: (847) 587-7650
Contact: Steve Bozeman, Owner/EGSA
Business: We are an independent insurance adjusting firm used for adjusting insurance claims in the power generation industry. We assist the power plants in determining scope of damages and recommended repair/replacement methods and advise the insurance company accordingly.

Central Power Systems & Services (MF)
Liberty, MO
(816) 781-8070 Fax: (816) 781-2207
Contact: Bill Allen, President
Business: Manufacturer of Powerforce® generator sets and power units 350kW to 1225kW for heavy duty application. Distributor for MTU Onsite Energy in Missouri, Kansas and Oklahoma providing generator sets from 20kW to 3250kW. Distributor for ASCO transfer switches. Dealer for Kohler Power Systems residential generator sets and transfer switches.

Cime Power Systems SACV (DD)
Mexico City D.F. Mexico
52 555 386 3108 Fax: 52 555 386 3155
Contact: Richard Maiselson, President
Business: Distributor for Gillette and Generac.

Cober, Dean (AF)
New Dundee, ON Canada
(519) 696-3461
Contact: Dean Cober
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Community Motors Inc. (AE)
New Caney, TX
(281) 354-8087 Fax: (281) 354-8010
Contact: Eric Nesloney, President
Business: Rewind electric motors/generators just North of Houston.

Craig, Jesse (AF)
Lindsay, ON Canada
(705) 324-7192
Contact: Jesse A. Craig
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Crews, David (AF)
Pontypool, ON Canada
(905) 983-9386
Contact: David Crews
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Cummins Power Generation, Guam (DD)
Barrigada, GU
(671) 632-5160 Fax: (630) 632-5167
Contact: Thomas R. Vermette BSEE, Power Generation Supervisor
Business: The exclusive Cummins Power Generation distributor for Guam and the Western Pacific providing sales, service and parts for Cummins/Onan standby and prime power generator sets, transfer switches and switchgear. Startup and commissioning, warranty service, PowerCare, Load Bank testing, 24x7 emergency service, diesel fuel delivery, training.

Diesel Technology Forum (AB Full)
Frederick, MD
(301) 668-7230 Fax: (301) 668-7234
Contact: Allen Schaeffer, Executive Director
Business: The Diesel Technology Forum brings together the diesel industry, diesel user community, public interest leaders, government officials, academics, scientists, and public health researchers to encourage the exchange of information, scientific findings and points-of-view to current and future uses of diesel technology. For more information about the Forum, visit www.dieselforum.org.

Donaldson, Travis (AF)
Stirling, ON Canada
(613) 395-5295
Contact: Travis Donaldson
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Dubay, Paul (AF)
Covington, LA
(985) 867-5671
Contact: Paul M. Dubay
Business: Student at Penn Foster College majoring in Electrical Power Generation.

EnerSys (MF)
Reading, PA
(610) 208-1991 Fax: (610) 372-8613
Contact: Steve Vechy, Director of Marketing
Business: EnerSys is the world's largest industrial battery manufacturer. Our product range includes genset batteries for diesel starting.

Gulf Star Rental Solutions (DD)
Beaumont, TX
(409) 842-3181 Fax: (409) 842-3230
Contact: Bill Grimm, National Fleet & Service Manager
Business: Rental generator company

Indiana Power Service & Supply, Inc. (DD)
Indianapolis, IN
(317) 271-1672 Fax: (317) 271-1673
Contact: Daniel N. Penoff, Operations Manager
Business: Service dealer for Generac. Service and repair all makes and models.

Interstate Generator Inc. (AE Full)
Bronx, NY
(718) 689-2418 Fax: (718) 386-6496
Contact: Richard J. Brandenstein, President
Business: We are in the engine and generator service business, servicing gensets used in the Motion Picture Industry. We also service industrial engines used to inflate fabric air structures.

McGill, David (AF)
Oakville, ON Canada
(905) 847-5532
Contact: David McGill
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Phillips, Brock (AF)
La Salette, ON Canada
(519) 582-1753
Contact: Brock Phillips
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation.

Power and Compression Sales, Inc. (CI)
Lafayette, CA
(925) 935-5700 Fax: (925) 935-6883
Contact: Mark McElyea, President
Business: We buy and sell used engine generators and gas turbine generators (all makes and models over 200kW).

Power ConSEPS, LLC (AE)
Ashburn, VA
(703) 723-4756
Contact: Thomas Skuce, Owner & General Manager
Business: Power ConSEPS provides sales and business development consulting services to the critical power & HVAC industries.

Siemens Building Technologies (EM)
Syracuse, NY
(315) 437-2726 Fax: (315) 437-9049
Contact: Peter M. Graf, Service Specialist
Business: Siemens Building Tech. installs and maintains cogen type systems. Fuel sources range from natural gas to digester and diesel. Plant types include grid, isolated and connected import and export baseload sites. We perform general planned maintenance to minor and major overhauls on site and off site.

Sinclair, Anthony (AF)
Bowmanville, ON Canada
(905) 442-5411
Contact: Anthony Sinclair
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation

Stairs, Dan (AF)
Elmvalle, ON Canada
(705) 322-8102
Contact: Dan Stairs
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation

Thompson, Roberta (AF)
Hampton, ON Canada
(905) 436-9438
Contact: Roberta Thompson
Business: Student at Sir Sandford Fleming College studying Electrical Power Generation

University of Calgary (AD)
Calgary, AB Canada
(403) 899-8951 Fax: (403) 210-6995
Contact: Dave Billingham, Electrical Utilities Distribution Operator
Business: The University of Calgary is an academic institution with nearly 30 onsite power generators in place, with more coming on stream in the next few years. These units range from 45 kW to 545 kW, with diesel, natural gas and propane prime movers.

Walters, Jim (AD)
White Bear Lake, MN
(651) 775-7783
Contact: Jim Walters
Business: I have an interest in the onsite power industry and am pursuing career options.

Webster, Sean (AF)
Lindsay, ON Canada
(705) 878-1405
Contact: Sean Webster
Business: Student at Sir Sandford Fleming College majoring in Electrical Power Generation.

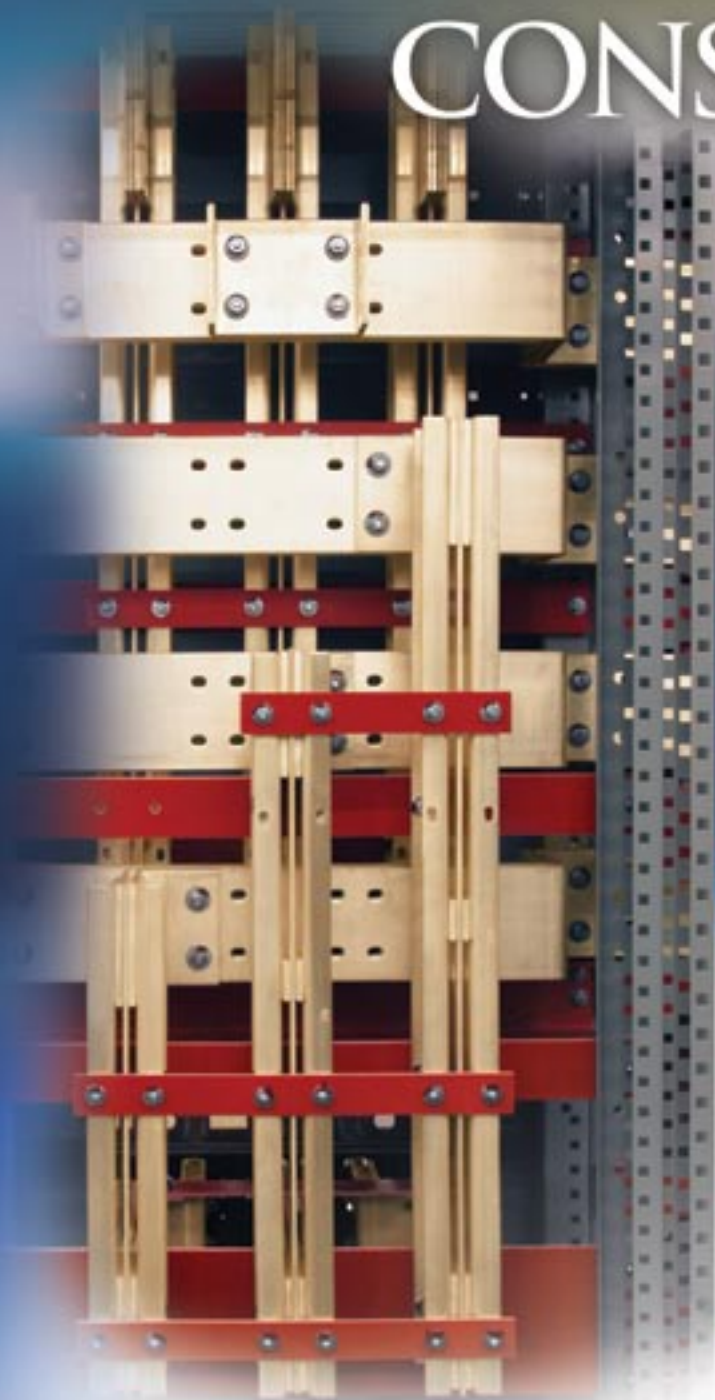
Whalen, Nick (AF)
Brehin, ON Canada
(705) 238-2470
Contact: Nick Whalen
Business: Student at Sir Sandford Fleming College majoring in Electrical Power Generation.

York County Vehicle Maintenance (AD)
Yorktown, VA
(757) 890-3845 Fax: (757) 890-3841
Contact: Denny Kincade, Maintenance Supervisor
Local municipality - maintain and repair fire trucks, ambulances, cars, trucks, heavy equipment and stand-by emergency generators.

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